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[NaNO₂. Thermodynamic properties. *Khim.* 40, 1843 (1967). C.A. 68, 133b (1969); H. F. Smyth *et al.*, *Am. J.* (1969). Review of chemistry of m as related to meat curing: *Bard & Meat Products*, J. F. Price, B. S. Seman, 2nd ed. (1971) pp 452-470. Hygroscopic granules, rods, or powder; nitrate in air. d 2.17. mp 271°. parts cold water, 0.6 part boiling even by weak acids with evolution of aq soln is alkaline. pH ~9. Keep at: 180 mg/kg (Smyth). Incompatibilities: hypophosphites, iodides, sulfites, tannic acid, vegetable acids or tinctures.

Government regulation to determine food. nitroso compds, and in many other nic chemicals; dyeing and printing of silk, and linen; photography. In preserving; in processing smoked meat chemistry. r; antidote (cyanide poisoning). anide poisoning. Has been used as a (blood pressure) depressant and as a stimulant.

Russide. [14402-89-2] Pentakis (d) disodium; sodium nitrosyl; sodium nitroferrihydride; sodium nitro- Na_2O ; mol wt 261.92. C 22.93%, 17.55%, O 6.11%. $\text{Na}_2[\text{Fe}(\text{CN})_5]$. *oc. Roy. Soc. London* 5, 846 (1849). *et al.*, *Arch. Inst. Pharmacol. Exp. Review*: I. H. Tuzel, *J. Clin. Pharm.* Review of pharmacology, toxicology. J. H. Tinker, J. D. Michenfelder. Comprehensive description: *R. Subs.* 6, 487-513 (1977); A. Bull *et al.* (1978). [Nipride; Nitropress. Ruby-red, lustrous crystals. Sol in ~2.3 parts water; dec in aq soln. Reaction of many organic compds, e.g., alkali sulfides, zinc, SO_2 , etc. sensitive.

e. [62-76-0] Ethanedioic acid disodium salt. C 17.93%, Na 34.31%, O 47.76%.

White, crystalline powder. Sol in 27 parts water, 16 parts alcohol. The aq soln is practically neutral. Symptoms of overexposure by ingestion: anorexia, stomach pain, vomiting, weakness, cardiovascular collapse; headache, convulsions, stupor, coma; kidney damage. *Journal of Commercial Products*, R. E. Adams & Wilkins, Baltimore, 5th ed., 128.

Used in tanning and finishing leather. In potassium permanganate soln.

s. [1313-59-3] Sodium monoxide. 4.18%, O 25.81%. White, crystalline powder. d 2.27. Melts at a dull red color >400° into sodium peroxide and decomposes violently with water. *Handle with tongs and not by hand.* *Keep well closed.* agent; in certain chemical reactions as an oxidizing agent.

rate. [7632-04-4] Dextro. NaNaO_2 ; 28.11%, O 58.68%. NaBO_2 (anhydrous), ~95% of the perborate corresponds to available oxygen. Prepn from sodium metaborate and hydrogen peroxide: Leblond, Lambert, US 3109706 (1963 to Solvay & Cie.).

Tetrahydrate. White, odorless, crystalline powder; saline taste. Stable when kept cool and dry, but is dec with liberation of oxygen in warm or moist air. Dec >60°. Sol in ~40 parts water, the soln being alkaline and dec with the liberation of H_2O_2 , and then of oxygen. In the presence of acids, H_2O_2 is formed. *Keep well closed and in a cool place.*

Caution: Prevent swallowing of soln. **USE:** Bleaching straw and other fibers, ivory, sponges, brushes, waxes, textiles; in laundering, dentifrices, soaps. **THERAP CAT:** Antiseptic (topical). **THERAP CAT (VET):** Mouthwash.

8726. Sodium Perchlorate. [7601-89-0] Irenat. ClNaO_4 ; mol wt 122.44. Cl 28.96%, Na 18.78%, O 52.27%. NaClO_4 . **Monohydrate.** White, deliquescent crystals. Dec ~130°. d 2.02. Very sol in water. *Keep well closed.*

USE: In the explosives industry. **THERAP CAT:** Thyroid inhibitor.

8727. Sodium Permanganate. [10101-50-5] MnNaO_4 ; mol wt 141.93. Mn 38.71%, Na 16.20%, O 45.09%. NaMnO_4 . **Trihydrate.** Reddish-black, very hygroscopic granules. Very sol in water; dec by alcohol.

8728. Sodium Peroxide. [1313-60-6] Sodium dioxide; sodium superoxide; Solozone. Na_2O_2 ; mol wt 77.98. Na 58.96%, O 41.03%. The product of commerce contains 90-95% Na_2O_2 . Prepd by heating sodium metal to 300° in aluminum vessels with a current of air from which carbon dioxide has been removed. Prepn of the octahydrate: Penneman, *Inorg. Syn.* 3, 11 (1950).

Yellowish-white, granular powder. Absorbs water and CO_2 from the air. Freely sol in water, forming sodium hydroxide and hydrogen peroxide, the latter quickly dec into oxygen and water. With dil acids H_2O_2 is formed which remains stable. In contact with organic matter or readily oxidizable substances ignition and explosion may take place. *Keep tightly closed and protected from contact with organic or oxidizable substances.*

Caution: Irritant and corrosive. See Sodium Hydroxide. **USE:** Bleaching animal and vegetable fibers, feathers, bones, ivory, wood, wax, sponges, coral; rendering air charged with CO_2 respirable as in torpedo boats, submarines, diving bells, etc.; purifying air in sick rooms; dyeing and printing textiles; chemical analysis. General oxidizing agent.

8729. Sodium Persulfate. [7775-27-1] Sodium peroxydisulfate. $\text{Na}_2\text{O}_8\text{S}_2$; mol wt 238.10. Na 19.31%, O 53.76%, S 26.93%. $\text{Na}_2\text{S}_2\text{O}_8$. Toxicity data: DaVal, *Arch. Ital. Sci. Farmacol.* 2, 445 (1933).

White, crystalline powder. Gradually dec; decomposes by moisture and higher temp. Initial soly in water at 20°: 549 g/l; dec by alcohol and silver ions. MLD in rabbits (mg/kg): 178 i.v. (DaVal).

Caution: Highly irritating to skin, mucous membranes. **USE:** Bleaching and oxidizing agent; promoter for emulsion polymerization reactions.

8730. Sodium Pertechnetate ^{99m}Tc . [23288-60-0] Pertechnetate. Ultra-Technekow. $\text{NaO}_4^{99m}\text{Tc}$. Prepn: Keller, Kapellakopoulos, *Radiochim. Acta* 1, No. 2, 107 (1963), C.A. 59, 1256a (1963); Kapellakopoulos, *AEC Accession No. 31424*, Rept. No. KFK-197, 73 pp (1964), C.A. 62, 7350d (1965). Clinical application for labelling red blood cells: D. Ducassou *et al.*, *Brit. J. Radiol.* 49, 344 (1976). Diagnostic use in Meckel's diverticulum: D. R. Cooney *et al.*, *J. Pediatr. Surg.* 17, 611 (1982); in thyroid neoplasm: M. Vorne, K. Jarve, *Eur. J. Nucl. Med.* 13, 362 (1987). Review of diagnostic use in brain scanning: J. G. McAfee *et al.*, *J. Nucl. Med.* 5, 811-827 (1964); in thyroid function: M. S. Sucupira *et al.*, *Int. J. Nucl. Med. Biol.* 10, 29-33 (1983).

THERAP CAT: Diagnostic aid (radioactive imaging agent).

8731. Sodium Phenolsulfonate. [1300-51-2] Hydroxybenzenesulfonic acid sodium salt; sodium sulfocarbonate. $\text{C}_6\text{H}_5\text{SO}_3\text{Na}$; mol wt 196.16. C 36.74%, H 2.57%, Na 11.72%, O 32.62%, S 16.35%. $\text{HOC}_6\text{H}_4\text{SO}_3\text{Na}$.

Dihydrate. White, odorless crystals; slightly bitter taste; somewhat efflorescent in dry air. One gram dissolves in 4.2 ml water, 0.8 ml boiling water, 140 ml alcohol, 13.5 ml boiling alcohol, 5 ml glycerol. The aq soln is neutral.

THERAP CAT: Intestinal antiseptic. **THERAP CAT (VET):** Has been used as an intestinal antiseptic, in dusting powders for ulcers, slowly granulating wounds and in dilute solution in the eye.

8732. Sodium Phenoxide. [139-02-6] Sodium phenate; sodium carboxylate; sodium phenolate; phenol sodium. $\text{C}_6\text{H}_5\text{NaO}$; mol wt 116.09. C 62.08%, H 4.34%, Na 19.80%, O 13.78%. $\text{C}_6\text{H}_5\text{ONa}$. Prepn from phenol and NaOH in dil methanol: Kornblum, Lurie, *J. Am. Chem. Soc.* 81, 2710 (1959).

White to reddish, deliquescent rods or granules. Decomposed by the CO_2 of the air. Very sol in water; sol in alcohol. The aq soln is caustic.

8733. Sodium Phosphate, Dibasic. [7558-79-4] Dibasic sodium phosphate; disodium hydrogen phosphate; disodium orthophosphate; disodium phosphate; DSP; phosphate of soda; secondary sodium phosphate. $\text{HNa}_2\text{O}_4\text{P}$; mol wt 141.96. H 0.71%, Na 32.39%, O 45.08%, P 21.82%. Na_2HPO_4 . Industrial production: Faith, Keyes, & Clark's *Industrial Chemicals* (John Wiley, New York, 4th ed., 1975) pp 746-754. Toxicity of heptahydrate: H. F. Smyth *et al.*, *Am. Ind. Hyg. Assoc. J.* 30, 470 (1969).

Anhydrous, exsiccated sodium phosphate. Hygroscopic powder. On exposure to air will absorb from 2 to 7 mols H_2O , depending on the humidity and temp. Sol in ~8 parts water, much more sol in hot water. Soly per 100 gal water increases from ~14 lbs at slightly >0° to over 900 lbs at 95°. Insol in alc. pH of 1% aq soln at 25°: 9.1. *Keep well closed.*

Dihydrate. Sorensen's phosphate; Sorensen's sodium phosphate.

Heptahydrate. Crystals or granular powder. Stable in the air. d ~1.7. Sol in 4 parts water, more sol in boiling water; practically insol in alcohol. The aq soln is alkaline, pH ~9.5. LD₅₀ orally in rats: 12.93 g/kg (Smyth).

Dodecahydrate. Translucent crystals or granules; readily loses 5 mols of water on exposure to air at ordinary temp. mp 34-35° (when it contains the full 12 mols of H_2O). d ~1.5. Sol in 3 parts water; practically insol in alcohol. Aq soln is alkaline, pH ~9.5. *Keep well closed and in a cool place. Incompat:* Alkaloids, antipyrine, chloral hydrate, lead acetate, pyrogallol, resorcinol.

Caution: Anhydrous form may cause mild irritation to skin, mucous membranes; intern. causes purging.

USE: As sequestrant, emulsifier and buffer in foods. As mordant in dyeing; for weighting silk; in tanning; in manuf of enamels, ceramics, detergents, boiler compds; as fireproofing agent; in soldering and brazing instead of borax; as reagent and buffer in analytical chemistry.

THERAP CAT: Cathartic. **THERAP CAT (VET):** Laxative.

8734. Sodium Phosphate, Monobasic. [7558-80-7] Sodium biphosphate; sodium dihydrogen phosphate; acid sodium phosphate; monosodium orthophosphate; primary sodium phosphate. $\text{H}_2\text{NaO}_4\text{P}$; mol wt 119.98. H 1.68%, Na 19.16%, O 53.34%, P 25.82%. NaH_2PO_4 . It is about 99% pure.

Monohydrate. White, odorless, slightly deliquescent crystals or granules. At 100° loses all its water; when ignited it converts into metaphosphate. Freely sol in water; practically insol in alcohol. The aq soln is acid. pH of 0.1 molar aq soln at 25°: 4.5.

Dihydrate. Orthorhombic bisphenoidal colorless crystals, mp 60°. d 1.915. At room temp crystallizes with $2\text{H}_2\text{O}$. Directions for max yield: Beans, Kiehl, *J. Am. Chem. Soc.* 49, 1878 (1927).

USE: In baking powders; in boiler water treatment; as dry acidulant and sequestrant for foods: Tidridge, Pals, US 3030213 (1962 to FMC).

THERAP CAT: Urinary acidifier. **THERAP CAT (VET):** Urinary acidifier.

pectorant; iodine supplement; iobacillosis, actinomycosis. For et. In iodine deficiency and in or mercury. Orally only, not by nent of bursal enlargements.

anate(VI). [10294-64-1] $K_2Na_2O_7$. 9.67%, Mn 27.87%, O 32.46%. *Z. Anorg. Allgem. Chem.* 277,

190°. Sol in water. Sol and stable ing agent. With HCl it gives free

disulfite. [16731-55-8] Potassium 222.32. K 35.17%, O 35.98%, S of commerce contains ~95% $K_2S_2O_5$.

under; sulfur dioxide odor; acid mds; oxidizes in air to sulfate, more ire. It may catch fire if much heat eely sol in water; insol in alcohol.

in breweries and wineries; bleaches uits and vegetables.

aphosphate. [7790-53-6] Potassium polymetaphosphate; potassium high mol wt polymer; degree of polymerization varies. Prep'd by J. Am. Chem. Soc. 74 studies: Jost, *Acta Cryst.* 16, 62, 25B, 1110 (1969); *idem*, *ibid.* 27B, metaphosphates: J. R. Van Wazer, *Chem. Radiochem.* 1, 1 (Interscience, New York, 1969).

ls. d_{20}^{25} 2.45. Insol in pure water. Sol (except potassium) salts.

thyl Sulfate. [562-54-9] CH_3KSO_4 . H 2.01%, K 26.03%, O 42.61%.

crystals. Sol in water, alcohol. ses.

lybdate(VI). [13446-49-6] K_2MoO_4 . Mo 40.29%, O 26.87%. deliquescent, cryst powder. d 2.3; mp 1050°; insol in alc. *Keep well closed.*

trate. [7757-79-1] Saltpeter, nitrate. 38.67%, N 13.85%, O 47.48%.

crisms, white granular or cryst powder. d 2.11; mp 333°; dec at 400° with am dissolves in 2.8 ml water, 0.5 ml alc. Sol in glycerol; insol in abs alc. Lowering of the temp. pH ~7. LD₅₀ anion/kg, Dollahite, Rowe, *Southwest Vet.* 27, 246 (1974).

large quantities may cause violent exposure to small amts may produce emia, nephritis.

luxes, pickling meats; manuf glass-asting powders; freezing mixtures; treating tobacco to make it be

c.

Nitrite. [7758-09-0] KNO_2 ; mol wt 101.10. N 13.45%, O 36.60%. The nitrite of potassium, the remainder consisting of ~85% KNO_2 , the remainder consisting of ~15% KNO_3 .

flow, deliquescent granules or rods. On th evolution of brown fumes of nitrogen p 441° (decompn starts at 350°). Sol in alc. The aq soln is alkaline.

Southwest Vet. 27, 246 (1974). *USE:* In analytical chemistry.

THERAP CAT: Vasodilator; antidote (cyanide poisoning).

7735. Potassium Oleate. [143-18-0] Oleic acid potassium salt. Approx $C_{18}H_{33}KO_2$. Yellowish or brownish, soft mass. Sol in water, alc. The aq soln is alkaline to phenolphthalein. *USE:* Detergent.

7736. Potassium Oxalate. [583-52-8] $C_2K_2O_4$; mol wt 166.22. C 14.45%, K 47.04%, O 38.50%. $K_2C_2O_4$.

Occurs as the monohydrate, colorless, odorless crystals; efflorescent in warm dry air. *Poisonous!* d 2.13. Loses its water at 160° when ignited is converted into carbonate without appreciable charring. Sol in 3 parts water.

USE: Cleaning and bleaching straw, removing stains in photography; *in vitro* blood anticoagulant; also in analytical chemistry.

7737. Potassium Percarbonate. [589-97-9] $C_2K_2O_6$; mol wt 198.21. C 12.12%, K 39.45%, O 48.43%. $K_2C_2O_6$. Prep'd of practically anhydrous compd: Partington, Fathallah, *J. Chem. Soc.* 1950, 1934.

Monohydrate. White, granular mass. Sol in water with evolution of oxygen. One part potassium percarbonate is sol in 15 parts of cold water; dec in boiling water; 100 parts water dissolve 6.5 parts potassium percarbonate at ordinary temp. *Keep dry and protected from light.*

Caution: Strong irritant. Causes vomiting if swallowed. Large quantities can be fatal.

USE: Has been used in microscopy for detecting tubercle bacilli stained with fuchsin in smears; in photography under the name *Anti-hypo*, to remove last traces of sodium thiosulfate; also as oxidizing agent in chem analyses, but is no longer favored.

7738. Potassium Perchlorate. [7778-74-7] Peroidin; Perchlorac. ClO_4 ; mol wt 138.55. Cl 25.59%, K 28.22%, O 46.19%. $KClO_4$.

Colorless crystals or white, cryst powder. Dec at 400°; also dec by organic matter, oxidizable substances and on concussion, but is less reactive than the chlorate. d 2.52. Sol in 65 parts cold water, 15 parts boiling water; practically insol in alcohol.

USE: In explosives, pyrotechnics and photography, in analytical chemistry.

7739. Potassium Periodate. [7790-21-8] Potassium metaperiodate. IKO_4 ; mol wt 230.00. I 55.18%, K 17.00%, O 27.82%. KIO_4 . Prep'd by oxidizing potassium iodate with chlorine in alkaline soln: Hill, *J. Am. Chem. Soc.* 50, 2678 (1928); *ibid.* 51, 171 (1929).

Colorless tetragonal crystals, d_4^{25} 3.618. mp 582°. Soly in water (g/100 g H_2O): 0.168 at 0°; 0.42 at 20°; 0.93 at 40°; 2.16 at 60°; 4.44 at 80°; 7.87 at 100°; also given as 0.66 at 13°. Slightly sol in aq KOH.

Caution: Highly irritating to skin, eyes, mucous membranes. *USE:* Powerful oxidizer in acid soln, oxidizing manganese compounds to permanganate; used for this purpose in analytical chemistry (colorimetric estimation of Mn), also for the oxidation of some organic compds.

7740. Potassium Permanganate. [7722-64-7] Permanganic acid potassium salt; chameleon mineral. $KMnO_4$; mol wt 158.03. K 24.74%, Mn 34.76%, O 40.50%. Prep'd from manganese ore by electrolytic oxidation: *Faith, Keyes & Clark's Industrial Chemicals*, F. A. Lowenheim, M. K. Moran, Eds. Wiley-Interscience, New York, 4th ed., 1975 pp 679-683. Toxicity study: H. F. Smyth *et al.*, *Am. Ind. Hyg. Assoc. J.* 30, 110 (1969).

Dark purple or bronze-like, odorless crystals. Almost opaque to transmitted light and of a blue metallic luster by reflected light. Sweet with astringent aftertaste; stable in air. Dec ~240° with evolution of oxygen. d 2.7. Soluble in 14.2 parts cold, 3.5 parts boiling water. Dec by alc and many other organic solvents, also by coped acids with liberation of oxygen; with HCl, chlorine is liberated. Readily dec by many reducing substances,

such as ferrous salts, iodides, oxalates, etc., especially in the presence of an acid. *Caution:* Take great care in handling as explosions may occur if it is brought into contact with organic or other readily oxidizable substances, either in soln or in the dry state. *Incompat.* Alcohol, arsenites, bromides, iodides, hydrochloric acid, charcoal; organic substances generally; ferrous or mercurous salts, hypophosphites, hyposulfites, sulfites, peroxides, oxalates. LD₅₀ orally in rats: 1.09 g/kg (Smyth).

Caution: Dilute solns are mildly irritating and high concns are caustic.

USE: Bleaching resins, waxes, fats, oils, straw, cotton, silk and other fibers and chamois skins; dyeing wood brown; printing fabrics; washing CO₂ in manuf mineral waters; exterminating *Oidium tuckeri*; photography; tanning leathers; purifying water; with formaldehyde soln to expel formaldehyde gas for disinfecting; as an important reagent in analytical and synthetic organic chemistry.

THERAP CAT: Anti-infective (topical).

THERAP CAT (VET): Antiseptic (topical), astringent, deodorant.

7741. Potassium Persulfate. [7727-21-1] $K_2O_8S_2$; mol wt 270.32. K 28.93%, O 47.35%, S 23.72%. $K_2S_2O_8$. The article of commerce contains 93-97% $K_2S_2O_8$.

Colorless or white, odorless crystals. Gradually dec, losing available oxygen; dec more quickly at higher temps; completely dec ~100°. A powerful oxidizing agent. Sol in ~50 parts water, 25 parts water at 40°; insol in alc; the aq soln dec at ordinary temp and more rapidly on warming. The aq soln is acid. *Keep well closed, in a cool place.*

USE: Bleaching fabrics, soaps; in photography under the name *Anthion* to remove last traces of thiosulfate from plates and paper; in analytical chemistry.

7742. Potassium Phenoxide. [100-67-4] Phenol potassium salt; potassium phenate; potassium phenylate; potassium carboxylate. C_6H_5KO ; mol wt 132.20. C 54.51%, H 3.81%, K 29.58%, O 12.10%. C_6H_5OK . Prep'd from phenol and KOH in dil methanol: Kornblum, Lurie, *J. Am. Chem. Soc.* 81, 2710 (1959).

White to reddish, hygroscopic, cryst lumps. Very sol in water; sol in alcohol. The aq soln is strongly alkaline. *Keep tightly closed.*

7743. Potassium Phosphate, Dibasic. [7758-11-4] Dipotassium phosphate; dikalium phosphate; DKP; dipotassium hydrogen phosphate. HK_2O_4P ; mol wt 174.18. H 0.58%, K 44.89%, O 36.74%, P 17.78%. K_2HPO_4 .

White, somewhat hygroscopic granules. Very sol in water, slightly in alcohol. 100 g will dissolve rapidly and completely in 67 g of cold water. Converted into pyrophosphate by ignition. The aq soln is slightly alkaline to phenolphthalein. *Keep well closed.*

USE: Buffering agent in antifreeze solns; nutrient in the culturing of antibiotics; ingredient of instant fertilizers; as sequestrant in the prep'n of non-dairy powdered coffee creams.

THERAP CAT: Cathartic.

7744. Potassium Phosphate, Monobasic. [7778-77-0] Potassium biphosphate; potassium acid phosphate; potassium dihydrogen phosphate; monopotassium phosphate; Sörensen's potassium phosphate. $H_2K_2O_4P$; mol wt 136.09. H 1.48%, K 28.73%, O 47.03%, P 22.76%. KH_2PO_4 .

Colorless crystals or white, granular powder; permanent in air; at 400° loses H_2O , forming metaphosphate. d 2.34. Sol in ~4.5 parts water. Insol in alcohol. pH 4.4-4.7.

USE: In buffers for determination of pH. Pharmaceutical aid (buffering agent).

7745. Potassium Phosphate, Tribasic. [7778-53-2] Tripotassium phosphate. K_3O_4P ; mol wt 212.27. K 55.26%, O 30.15%, P 14.59%. K_3PO_4 . Purification: Jänecke, *Z. Physik. Chem.* 127, 75 (1927); Simon, Schulze, *Z. Anorg. Allgem. Chem.* 242, 331 (1939).

Deliquescent, orthorhombic crystals. d_4^{17} 2.564. mp 1340°. Soly in water: 43.7% at 0°; 50.8% at 25°; 59.7% at 45.1°. Insol in alcohol. Aq solns are strongly alkaline.

Octahydrate. Flat, rectangular platelets, mp 45.1°.